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## PART I – SECTION B SUPPLIES/SERVICES & PRICE/COST

This contract comprises 1) firm requirements for delivery of first articles and associated effort, 2) estimated requirements to be provided pursuant to FAA Acquisition Management System (AMS) clause [3.2.4.-19](#), Requirements (October 1996), and 3) additional option items. All prices are firm-fixed unless otherwise specified.

### B.1 SUPPLIES AND SERVICES – BASE CONTRACT PERIOD

The Contractor must provide the supplies and services listed herein. Acronyms used are:

CLIN – Contract Line Item Number  
IAW – In accordance with  
NLT – Not later than  
SOW – Statement of work  
NSP – Not separately priced  
CDRL – Contract Data Requirements List  
NTE – Not to exceed  
TBD – To be determined  
Ea – Each

The following CLINs must be delivered on a firm-fixed price basis at times specified in Section F of this contract.

#### FIRM REQUIREMENTS: CLINs 0001 – 0047

CLIN	Supplies/Services	Qty	Unit	Unit Price	Amount
0001	First Articles Runway End Identifier Lights (REIL) system IAW FAA-E-2159E, and C.3.1.1	5	Ea		
0002	First Articles Site Spares Kit IAW Section C.8.3.1.3, J-4, and CDRL 032 <b>(To be priced after the PC and J-4 is completed.)</b>	5	Ea		
0003	Runway End Identifier Lights (REIL) system IAW FAA-E-2159E, and C.3.1.1	32	Ea		
0004	Site Spares Kit IAW Section C.8.3.1.3, J-4, and CDRL 032 <b>(To be priced after the PC and J-4 is completed.)</b>	32	Ea		
0005	System/Subsystem Specification (SSS) IAW Section C.3.2.2 and CDRL 001	1	Ea		

0006	Quality System Plan (QSP) IAW Section C.3.2.3 and CDRL 002	1	Ea		
0007	Reliability Analysis Report IAW Section C.3.2.4.1 and CDRL 003	1	Ea		
0008	Maintainability Analysis Report IAW Section C.3.2.4.2 and CDRL 004	1	Ea		
0009	FRACAS Reports IAW Section C.3.2.5 and CDRL 005	1	Lot		
0010	Program Management IAW Section C.4				
0011	Program Management Plan IAW Section C.4.2 and CDRL 006	1	Ea		
0012	Network Logic Schedule IAW Section C.4.2.1 and CDRL 007	1	Ea		
0013	Program Status Reports (PSR) IAW Section C.4.2.3 and CDRL 008	1	Lot		
0014	Post Award Conference (PAC) IAW Section C.4.3.1	1	Ea		
0015	Agenda and Minutes for Meetings, Reviews and Audits IAW CDRL 009		Lot		
0016	Program Overview Meetings (POM) IAW Section C.4.3.2	10	Ea		
0017	Technical Interchange Meetings (TIM) IAW Section C.4.3.2	6	Ea		
0018	Preliminary Design Review (PDR) IAW Section C.5.1 and CDRL 010 PDR Report	1	Ea		
0019	Critical Design Review (CDR) IAW Section C.5.2 and CDRL 011 CDR Report	1	Ea		
0020	Test and Evaluation (T&E) IAW Section C.6				

0021	Contractor's Master Test Plan (CMTP) IAW Section C.6.2 and CDRL 012	1	Ea		
0022	Design Qualification Test (DQT) Plan IAW Section C.6.4.1 and CDRL 013 and, DQT Procedures IAW Section C.6.4.1 and CDRL 014	1	Ea		
0023	Design Qualification Test (DQT) IAW Section C.6.5.2 and CDRL 017 DQT Report	1	Ea		
0024	Production Acceptance Test (PAT) Plan IAW Section C.6.4.2 and CDRL 015; PAT Procedures IAW Section C.6.4.2 and CDRL 016	1	Ea		
0025	PAT Reports IAW Section C.6.5.3 and CDRL 018		ASREQ		
0026	Type Testing (TT) IAW Section C.6.5.4, CDRL 019 TT Plan, CDRL 020 TT Procedures, and CDRL 021 TT Report		ASREQ		
0027	Configuration Management (CM) Program IAW Section C.7				
0028	Configuration Management Plan IAW Section C.7.1 and CDRL 022	1	Ea		
0029	Configuration Status Accounting Report IAW Section C.7.4 and CDRL 025	1	Ea		
0030	Configuration Audit Plan IAW Section C.7.5 and CDRL 026	1	Ea		
0031	Functional Configuration Audit (FCA) IAW Section C.7.5.1, CDRL 027 FCA Traceability Matrix, and CDRL 028 FCA Report	1	Ea		
0032	Physical Configuration Audit (PCA) IAW Section C.7.5.2 and CDRL 029 PCA Report	1	Ea		
0033	Configuration Verification and Audit Summary Report IAW Section C.7.5.2 and CDRL 030	1	Ea		
0034	Logistics Support (LS) IAW Section C.8				

0035	Logistics Guidance Conference IAW Section C.8.1	1	Ea		
0036	Logistics Management Information (LMI) Data Products IAW Section C.8.2.1 and CDRL 031	1	Lot		
0037	Provisioning Conference (PC) IAW Section C.8.2.2	1	Ea		
0038	Spare Parts Peculiar IAW Section C.8.3.1.2 and J-5 <b>(To be priced after the PC and J-5 is completed.)</b>	1	Lot		
0039	Spare Parts Common IAW Section C.8.3.1.1 and J-8 <b>(To be priced after the PC and J-8 is completed.)</b>	1	Lot		
0040	Tools and Test Equipment (T&TE) and T&TE List IAW Section C.8.4 and CDRL 033	1	Ea		
0041	Technical Data Package IAW Section C.8.5.1 and CDRL 034	1	Ea		
0042	Technical Instruction Book IAW Section C.8.5.2 and CDRL 035	1	Ea		
0043	Manuscript Plan for Technical Instruction Book IAW Section C.8.5.2.1 and CDRL 036	1	Ea		
0044	Validation Plan for Technical Instruction Book IAW Section C.8.5.2.2 and CDRL 037	1	Ea		
0045	OT&E Training IAW Section C.8.6.1	1	Ea		
0046	Task and Skills Analysis Report IAW Section C.8.6.2.1 and CDRL 038	1	Ea		
0047	COTS Training Materials Report IAW Section C.8.6.2.2 and CDRL 039	1	Ea		

## PART I – SECTION B SUPPLIES/SERVICES & PRICE/COST

### B.2 ENGINEERING SUPPORT SERVICE

In accordance with Sections C.9 and H.3, the Government may issue orders for engineering support service on a time and material basis at the rates listed below or, as mutually agreed, on a negotiated firm-fixed price or cost-plus fixed fee basis. Task orders for Engineering Support Service may be issued at any time during the contract's period of performance.

The Government will only reimburse the Contractor for work performed in the authorized labor categories and rates listed below. Hourly rates must include all direct and indirect costs and profit.

Engineering Services must not exceed \$100,000.

#### B.2.1 HOURLY RATES

<b>Labor Category</b>	<b>Calendar Year 2005</b>	<b>Year 2006 Calendar</b>	<b>Calendar Year 2007</b>	<b>Calendar Year 2008</b>	<b>Calendar Year 2009</b>	<b>Calendar Year 2010</b>
Project Engineer/Manager						
Electrical Engineer						
Test Engineer						
Technician						
Logistic Engineer						
Civil Engineer						
Quality Engineer						
Data Management Specialist						

#### B.2.2 MINIMUM QUALIFICATIONS

**Project Engineer/Manager** – B.S. in Electrical Engineering from an accredited institution and 7 yrs. experience in the management of approach lighting systems or other electrical/electronic equipment procurement relating to the National Airspace System (NAS). Equivalent experience in the management of the procurement of approach lighting systems or other electrical/electronic equipment of 10 yrs. or more may also be used. Must be knowledgeable of all FAA procurement requirements. Must be knowledgeable on the management, design, development, and integration

of approach lighting systems or other electrical/electronic equipment preferably used in the NAS. Must be knowledgeable of all aspects of Quality, Logistics, Test, and Configuration Management. Must have excellent oral and written skills.

**Senior Engineer** – These individuals must provide engineering expertise with systems engineering/integration disciplines in National Airspace System services for Visual Guidance Lighting Systems (REIL, PAPI, MALSR, etc.), Air-to-Ground/Ground-to-Ground Radio Control Elements. Personnel in this category must possess a B.S. in Engineering, preferable Master Degree in Engineering, or equivalent, with a minimum of three years of experience in engineering, physics, mathematics, or related discipline. The individual must possess knowledge in the installation and integration of airport lighting systems.

**Electrical Engineer** – B.S. in Electrical Engineering from an accredited institution and 5yrs. experience in approach lighting system design. Equivalent experience in approach lighting system design of 8 yrs. or more may also be used. Must be knowledgeable on approach lighting systems and their application as a landing aid. Must be well versed in power systems and their applications to approach lighting circuits. Must be knowledgeable in computer aided design software (CAD), preferably AutoCAD. Must have excellent oral and written communication skills.

**Test Engineer** – B.S. in Electrical Engineering from an accredited institution and 3 yrs. experience in approach lighting system testing. Equivalent experience in testing approach lighting systems of 5 yrs. or more may also be used. Must be knowledgeable on approach lighting systems and their designs and installations. Must be well versed in test methodologies as applied to approach lighting systems, test equipment, and test program set design and integration. Must have excellent oral and written communication skills.

**Senior Technician** – These individuals must provide technical expertise with system installation, and technical support of Navigation and landing Systems. Personnel in this category must possess a minimum of four years experience in installing and commissioning REIL, Remote Radio Control System (RRCS), Air-to-Ground Communication, or other lighting aids systems. These individuals must possess an understanding of installation and deployment of equipment to NAS facilities.

**Technician** – These individuals must provide technical expertise with system installation, and technical support of Navigation and landing Systems. Personnel in this category must possess a minimum of two years experience in installing and commissioning REIL, Air-to-Ground Communication, or other lighting aids systems. These individuals must possess an understanding of installation and deployment of equipment to NAS facilities.

**Civil Engineer** – B.S. in Civil Engineering from an accredited institution and 5 years experience. Equivalent experience of 7 years may also be used. This engineering position requires application of professional knowledge, practices, principles, theories, concepts, methods, techniques, and abilities for the discipline to which the position is classified. Responsibilities may include inspection/oversight, planning, developing, deploying, coordinating, implementing, constructing, installing, replacing, and engineering systems of

assigned facilities and/or systems. Incumbent is required to interact with personnel from other platforms, sections, field offices, and other local and Federal Government agencies. Professional Engineering License is preferred.

**Logistics Engineer** – B.S. in Electrical/Industrial Engineering from an accredited institution and 5 yrs. experience in the logistical management of large equipment production procurements. Equivalent experience in logistical management of large procurements of 7 yrs. or more may also be used. Must be knowledgeable of the DoD/FAA logistical requirements as pertained to life cycle management of large procurements. Must have excellent oral and written communication skills.

**Quality Engineer** – B.S. in Electrical/Industrial Engineering from an accredited institution and 5 yrs. experience in the management of the Quality Assurance of large procurements. Equivalent experience in Quality Assurance of large procurements of 7 yrs. or more may also be used. Must be knowledgeable in the FAA Quality Assurance requirements as they apply to large equipment procurements. Must be knowledgeable in Hardware and Software Quality Assurance with respect to ISO requirements. Must have excellent oral and written communication skills.

**CM Specialist** – B.S. in Engineering from an accredited institution and 3 yrs. experience in Configuration Management of electrical/electronic equipment procurements. Equivalent experience of 5yrs. or more in the Configuration Management of electrical/electronic equipment may also be used. Must be knowledgeable of the FAA Configuration Management requirements as applied to NAS equipment procurements. Knowledge of approach lighting equipment is desirable. Must have excellent oral and written skills.

**Data Management Specialist** – B.S. in Computer Science or a related field, from an accredited institution and 3 yrs. experience in data management, or 10 years of experience in data management with specific knowledge of acquisition databases. Must be knowledgeable of commercial database software and must have specific knowledge of the FAA's database requirements. Knowledge of approach lighting equipment is desirable. Must have excellent oral and written communication skills.

### **B.2.3 TRAVEL AND PER DIEM**

Actual and reasonable costs for transportation, lodging, meals, and incidental expenses will be reimbursed in accordance with Section H.3. Profits will not be paid on these costs.

Travel and Per Diem will not exceed **\$50,000**.

**B.3 OPTIONAL REQUIREMENTS****B.3.1 SUPPLIES/SERVICES AND PRICES/COSTS – FIRST OPTION**

The Government may unilaterally exercise CLINs 1001-1008, in whole or in part, from time to time, from the date of contract award for a period not to exceed 60 months at the firm-fixed prices listed below:

CLIN	Supplies/Services	Qty	Unit	Unit Price	Amount
1001	Interim Contractor Depot Logistics Support (ICDLS) IAW Section C.11.2		Lot		
1002	ICDLS Activity and Repair Status Report IAW Section C.11.2.6 and CDRL 048		MTHLY		
1003	ICDLS Transition Plan IAW Section C.11.2.7 and CDRL 049	1	Ea		
1004	Depot Level Training IAW Section C.11.1.1	1	Ea		
1005	FAA/Contractor Conferences IAW Section C.11.1.2		Lot		
1006	Maintenance Training Development – IAW Sections C.11.1.3, C.11.1.4, C.11.1.5, C.11.1.6, C.11.1.8, CDRL 040, CDRL 041, CDRL 042, CDRL 043, CDRL 044, CDRL 045, CDRL 047	1	Lot		
1007	OJT Training Materials IAW Section C.11.1.7 and CDRL 046 OJT Training Course	1	Ea		
1008	Maintenance Training Classes	12	Ea		

### B.3.2 BASE CONTRACT PERIOD PRODUCTION SYSTEMS PRICES/COSTS – SECOND OPTION

The base contract period of performance will be 24 months after contract award. Beginning at the Government's approval date of the PCA and a period not to exceed 24 months, the Government may issue orders for the following supplies at the prices specified below. Unless otherwise stated, all prices are firm-fixed.

CLIN	Supplies/Services	Qty	Unit	Unit Price	Amount
2001	Runway End Identifier Lights (REIL) system IAW FAA-E-2159E, and C.3.1.1	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
2002	Site Spares Kit IAW Section C.8.3.1.3, J-4 and CDRL 032	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
2003	Spare Parts Peculiar IAW Section C.8.3.1.2 and J-5 ( <b>To be priced after the PC and J-5 is completed.</b> )	1	Lot		
2004	Spare Parts Common IAW Section C.8.3.1.1 ( <b>To be priced after the PC and J-8 is completed.</b> )	1	Lot		

**B.3.3 PRODUCTION SYSTEMS PRICES/COSTS – THIRD OPTION**

Pursuant to Section H.4, the Government may extend the contract base period for an additional 12 months. During this period the Government may issue orders for the following supplies at the prices below. Unless otherwise stated, all prices are firm-fixed.

CLIN	Supplies/Services	Qty	Unit	Unit Price	Amount
3001	Runway End Identifier Lights (REIL) system IAW FAA-E-2159E, and C.3.1.1	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
3002	Site Spares Kit IAW Section C.8.3.1.3, J-4, and CDRL 032	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
3003	Spare Parts Peculiar IAW Section C.8.3.1.2 and J-5 ( <b>To be priced after the PC and J-5 is completed.</b> )	1	Lot		
3004	Spare Parts Common IAW Section C.8.3.1.1 ( <b>To be priced after the PC and J-8 is completed.</b> )	1	Lot		

**B.3.4 PRODUCTION SYSTEMS PRICES/COSTS – FOURTH OPTION**

Pursuant to Section H.4, the Government may extend the contract base period for an additional 12 months. During this period the Government may issue orders for the following supplies at the prices below. Unless otherwise stated, all prices are firm-fixed.

CLIN	Supplies/Services	Qty	Unit	Unit Price	Amount
4001	Runway End Identifier Lights (REIL) system IAW FAA-E-2159E, and C.3.1.1	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
4002	Site Spares Kit IAW Section C.8.3.1.3, J-4, and CDRL 032	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
4003	Spare Parts Peculiar IAW Section C.8.3.1.2 and J-5 ( <b>To be priced after the PC and J-5 is completed.</b> )	1	Lot		
4004	Spare Parts Common IAW Section C.8.3.1.1 ( <b>To be priced after the PC and J-8 is completed.</b> )	1	Lot		

**B.3.5 PRODUCTION SYSTEMS PRICES/COSTS – FIFTH OPTION**

Pursuant to Section H.4, the Government may extend the contract base period for an additional 12 months. During this period the Government may issue orders for the following supplies at the prices below. Unless otherwise stated, all prices are firm-fixed.

CLIN	Supplies/Services	Qty	Unit	Unit Price	Amount
5001	Runway End Identifier Lights (REIL) system IAW FAA-E-2159E, and C.3.1.1	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
5002	Site Spares Kit IAW Section C.8.3.1.3, J-4, and CDRL 032	1-5 6-10 11-20 21-30 31-40 41-50 51-60 61-70 71-80 81-90 91-100	Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea Ea		
5003	Spare Parts Peculiar IAW Section C.8.3.1.2 and J-5 ( <b>To be priced after the PC and J-5 is completed.</b> )	1	Lot		
5004	Spare Parts Common IAW Section C.8.3.1.1 ( <b>To be priced after the PC and J-8 is completed.</b> )	1	Lot		

## **PART I – SECTION C SCOPE OF WORK**

### **C.1 CONTRACT SCOPE**

The Contractor will provide all program management, engineering, production, test, technical, and engineering support service to manufacture, deliver, and as requested, assist with installation of Runway End Identifier Lights (REIL) systems.

All items under Part I – Section B are to be furnished by the Contractor. Additionally, the Contractor will furnish all data items as specified in the Contract Data Requirements Lists (CDRLs).

### **C.2 APPLICABLE DOCUMENTS**

The following specifications, standards, and other publications, including all amendments and supplements thereto are incorporated by reference and form a part of the contract to the extent specified herein. Wherever one of these publications is referred to in the contract, the reference will be deemed to include the publication as described below. Specifications referenced in one or more of the following specifications are also applicable. Any of the following documents, without a date, are to be the latest version, as of the time of issuance of the solicitation.

#### **C.2.1 PRECEDENCE OF DOCUMENTS**

In case of conflict between provisions of this contract, the following order of precedence is established:

Schedule-Sections A-J  
FAA Specification FAA-E-2159E  
FAA Specification FAA-G-2100G  
Other FAA Specifications  
Other FAA Documents  
FAA Standards and Orders  
DOD and Military Standards and Specifications  
Other Documents Incorporated by Reference

#### **C.2.2 FAA SPECIFICATIONS, STANDARDS, ORDERS AND DRAWINGS**

FAA-E-2159E	Runway End Identifier Lights (REIL) system
FAA-D-2494B	Technical Instruction Book, 3/14/84
FAA-E-1100A	Photometric Test Procedures for Flashings, 03/21/68
FAA-G-2100G	Electronic Equipment, General Requirements, 10/22/2001

FAA-STD-019C	Lightning Protection, Grounding, Bonding and Shielding Requirements for Facilities 6/1/99
FAA-STD-020B	Transient Protection, Grounding, Bonding and Shielding Requirements of Equipment 5/11/92
FAA-STD-028C	Contract Training Programs 11/16/2000
FAA-STD-1293C	Servicing Standards and Test Requirements for Ground Electronic Equipment
FAA Order 4650.30	Management & Control of NAS F&E Projects/ Materials (include change 1), 5/4/93
FAA Order 6850.5C	Maintenance of Lighted Navigational Aids, 3/27/95
FAA Order 3900.19	Occupational Safety & Health Program, 4/29/99
AC 150/5349-49A	Radio Control Equipment, 8/08/86
AC 150/5340-30	Design and Installation Details for Airport Visual Aids, 4/30/2004
AC 150/5345-47A	Isolation Transformers for Airport Lighting Systems, 12/9/87

### **C.2.3 MILITARY STANDARDS AND SPECIFICATIONS**

MIL-PRF-49506	Logistics Management Information, 11/11/96
MIL-STD-810F	Environmental Test Methods and Engineering Guidelines, 9/01/93
MIL-STD-2073-1D	DOD Material Procedures, Development and Application of Packaging Requirements, 10/05/2002
MIL-STD-961E	DOD Standard Practices for Defense Specifications, 8/01/2003
MIL-DTL-31000B	Technical Data Packages, 6/09/97
MIL-HDBK-61A	Configuration Management Guidance, 2/7/2001
MIL-HDBK-454A	General Guidelines for Electronics Equipment, 11/3/2000

### **C.2.4 OTHER DOCUMENTS**

ASTM D 3951-98	Standard Practice for Commercial Packaging, 11/01/98
NFPA No. 70	National Electric Code

ANSI/ISO/ASQC- Quality Systems-Model for Quality Assurance in Final Inspection and  
Q9003:1994 Test

ANSI/ISO/ASQC- Quality Management Systems – Requirements  
Q9001:2000

OSHA 29 CFR 1910 Occupational Safety and Health Standards

OSHA 29 CFR 1926 Safety and Health Regulations for Construction

## **C.2.5 OBTAINING COPIES OF DOCUMENTS**

a) Copies of FAA specifications and interface documents may be obtained from the Federal Aviation Administration, Headquarters Public Inquiry Center APA-230, 800 Independence Avenue SW, Washington, DC 20591, 202-267-3484. Requests should fully identify material desired and cite the solicitation or contract number.

b) Requests for copies of FAA documents not covered in the preceding paragraph should be addressed to the Contracting Officer. Requests should fully identify material desired and cite the solicitation or contract number.

c) Military Standards and Specifications can be ordered from the Department of Defense Single Stock Point (DODSSP), Building 4/Section D, 700 Robbins Avenue, Philadelphia, PA 19111-5098. Information is available at their website, <http://www.dodssp.daps.mil>.

d) Copies of ANSI/ASQC-Q-9001-1994 and ISO 9000-3 can be obtained from the following source: American Society for Quality Control, 611 East Wisconsin Avenue P.O. Box 3005, Milwaukee, Wisconsin 53201-3005. Phones: (414) 272-8575 or (800) 248-1946. The Fax is: (414) 272-1734.

e) Copies of the Acquisition Management System Test and Evaluation Process Guidelines are available in the FAA Acquisition System Toolset (FAST). The on-line Internet address of FAST is: <http://fast.faa.gov>.

f) Copies of OSHA standards can be viewed on-line at <http://www.osha.gov/>.

## **C.3 EQUIPMENT REQUIREMENTS**

### **C.3.1 REIL REQUIREMENTS**

The REIL equipment and all supporting equipment, documentation, and other requirements described in this SOW will be designed, developed, and produced in accordance with the requirements of this SOW. The data to be delivered by the Contractor prescribed by this SOW are specified in the Contract Data Requirements List (CDRL) included in Part I – Section J of this document.

### **C.3.1.1 REIL SYSTEMS**

The primary function of a REIL is to provide visual guidance to aircraft during approach for landing. The system consists of two synchronized flashing lights located near the runway threshold to provide rapid and positive identification of the approach end of runway.

The Contractor will produce the REIL Equipment and the ancillary items in accordance with the configuration listed below and in the quantities identified in SECTION B of the contract. Delivery of these items will be in accordance with SECTIONS D and F of this contract.

Each REIL system must consist of the following:

- 1 each CONTROL CABINET (CC)
- 2 each INDIVIDUAL CONTROL CABINETS (ICC)
- 2 each IDENTIFIER UNITS
- 1 each Aiming Device
- 1 each Site Spares Kit
- 2 Technical Instruction (TI) manuals included with each REIL system.

### **C.3.2 SYSTEM ENGINEERING**

#### **C.3.2.1 SYSTEM ENGINEERING MANAGEMENT**

The Contractor will develop and implement a System Engineering Management program for the definition, development, integration, and verification of the REIL requirements as allocated to the Computer Software Configuration Items (CSCI) and Hardware Configuration Items (HWCI). System engineering efforts will include all aspects of performance, quality, life cycle costs, maintainability, reliability, schedule, data processing reserves, and future growth requirements.

The Contractor will maintain effective control over the system engineering and design development process. This includes subcontract items and services, ensure cost, performance, and schedule requirements are met, provide early detection and resolution of problems, and reduce risk.

#### **C.3.2.2 SYSTEM/SUBSYSTEM SPECIFICATION (SSS)**

The Contractor will conduct system engineering analysis to translate and allocate the functional equipment requirements for the REIL from FAA-E-2159E to the system/subsystem specification. This will serve as the Contractor's system level functional baseline. The Contractor will allocate requirements from the system specification to the system design for further allocation and development.

**CDRL: 001 System/Subsystem Specification (SSS)****C.3.2.3 QUALITY ASSURANCE (QA)**

The Contractor will establish and maintain a documented quality system compliant with the requirements of ANSI/ISO/ASQ – Q9001-2000, “Quality Management Systems – Requirements”.

The Contractor will submit a Quality System Plan (QSP) in accordance with ANSI/ASO/ASQ-Q9001-2000, ATO-W-REIL-002, describing the Contractor’s quality system and its applicability to the contract to assure the delivery of products and services in conformance with all contractual requirements.

The QSP must assure, as a minimum, the following items and guidelines are included in the Program:

- (a) Sufficient, independent responsibility and authority are granted to assigned personnel so that quality problems can be identified, evaluated and reported, and that solutions can be recommended, all without fear of reprisal, intervention, or adverse action;
- (b) Adequate configuration management is performed throughout the life cycle; and
- (c) All tests and inspections are performed in compliance with contract requirements and all test data are complete, correct, traceable, repeatable, and acceptable.

The Contractor must require the same quality system from all sub-contractors. The Contractor will report its quality metrics during the Program Overview Meeting (POM) or in the Program Status Report (PSR) (CDRL 008) if a POM is not held.

**CDRL: 002 Quality System Plan (QSP)****C.3.2.4 RELIABILITY/MAINTAINABILITY****C.3.2.4.1 RELIABILITY PROGRAM**

The Contractor will establish and implement a Government-approved reliability program. The overall methodology for conducting a reliability program will be documented in a Reliability Program Plan. To demonstrate that the system meets the reliability requirements, prediction techniques may be in accordance with MIL-HDBK-217, MIL-HDBK-781 or be based on actual field and data use.

**CDRL: 003 Reliability Analysis Report****C.3.2.4.2 MAINTAINABILITY PROGRAM**

The Contractor will establish and implement a Government-approved maintainability program. The overall methodology for conducting a maintainability program will be documented in a Maintainability Program Plan. To demonstrate that the system meets the maintainability

requirements, prediction techniques may be in accordance with MIL-HDBK-470A, MIL-HDBK-472 or be based on actual field and data use.

#### **CDRL: 004 Maintainability Analysis Report**

##### **C.3.2.5 FAILURE REPORTING AND CORRECTIVE ACTION SYSTEM (FRACAS)**

The Contractor will establish and implement a FRACAS program. The FRACAS will provide a closed loop failure and fault reporting and analysis and corrective action process, and will be applied at the Lowest Replaceable Unit (LRU) level for COTS and the component level for newly developed hardware. The FRACAS will provide visibility into, and traceability of all reported failures and built-in test (BIT) anomalies, for all Contractor testing from discovery to closeout.

#### **CDRL: 005 FRACAS Reports**

##### **C.3.2.6 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) COMPLIANCE**

The REIL must comply with applicable regulations and guidelines related to employee safety and health in accordance with FAA Order 3900.19, and OSHA standards contained in 29 CFR 1910 and 29 CFR 1926.

#### **C.4 PROGRAM MANAGEMENT**

The Contractor will develop and implement a management program to efficiently and effectively execute the requirements of this contract to include: program control, systems engineering, logistics management, quality assurance, configuration management, subcontract management, management of Government furnished resources, risk management, security, etc.

##### **C.4.1 PROGRAM CONTROL**

The Contractor will assign a Program Manager (PM) with responsibility for control and coordination of all work performed. The PM must have experience in the areas such as company policies and procedures and knowledge of production management. The Contractor's PM must also have the authority to ensure efficient and timely program execution. The PM must be the single focal point within the Contractor's activity for all required tasks. The PM must be prepared at all times, given reasonable notice, to present and discuss with the Contracting Officer (CO) and/or the Contracting Officer's Technical Representative (COTR) the status of all requirements and problems.

The PM is responsible for coordinating the work of subcontractors and ensuring that all contract conditions are met. The PM will identify all key personnel to the CO in accordance with Section H.2 of the contract. The CO must be immediately notified of any changes in key personnel, along with an impact assessment and proposed solution (as necessary).

## **C.4.2 PROGRAM MANAGEMENT PLAN (PMP)**

The Contractor will prepare a PMP. The PMP will serve as the baseline for describing the Contractor's work plan. The PMP describes the process, activities, and personnel required to meet all the requirements set forth in the contract.

### **CDRL: 006 Program Management Plan**

## **C.4.2.1 NETWORK LOGIC SCHEDULE (NLS)**

The Contractor will establish a NLS that describes the sequence of events needed to accomplish the requirements of this contract by Work Breakdown Structure (WBS) elements. The Contractor will ensure that the NLS portrays an integrated schedule plan to meet the milestones and delivery requirements of this contract. The NLS must identify the program critical path. The NLS will be delivered to the Government in Microsoft Project format.

### **CDRL: 007 Network Logic Schedule (NLS)**

## **C.4.2.2 RISK MANAGEMENT**

The Contractor will identify program schedule risks and report the status of these risks to the Government on a monthly basis. The Contractor will evaluate program schedule risks and formulate plans and a risk management schedule for the elimination or reduction of such risks. The Contractor will identify these risks and their risk management techniques in the Risk Analysis Section of the PMP. The risk management schedule will be reviewed and discussed at the POM.

## **C.4.2.3 PROGRAM STATUS REPORT (PSR)**

The Contractor will prepare and submit monthly program status reports to the CO and the COTR. The report will include, as a minimum, an assessment of contractual efforts as of the date of the report, GFE utilization, areas of risk, and proposed approach(s) for correcting problems. The Contractor will also include a list of tasks in progress during the month and an estimate of percent completion, a list of tasks completed this month, and a list of items scheduled for production, test, delivery, and any other program milestones in the next three months. Contractor format is acceptable.

### **CDRL: 008 Program Status Reports**

## **C.4.3 MEETINGS, REVIEWS AND AUDITS**

Meetings will be held to ensure effective program management and efficient, effective resolution of problems throughout the life of the contract. The types and frequencies of these meetings must include, as a minimum, the items described in the following subparagraphs. The meetings/reviews will be held at the Contractor's facility, unless otherwise directed by the Government.

**C.4.3.1 POST AWARD CONFERENCE (PAC)**

A PAC will be held at the Contractor's facility approximately thirty (30) calendar days after contract award. During the PAC, the Contractor will brief its plans and schedule for satisfying each SOW requirement.

The PAC will be targeted for no more than 2 days in length. Government attendance will be limited to 10 personnel or less.

**CDRL: 009 Agenda and Minutes for Meetings, Reviews and Audits****C.4.3.2 PROGRAM OVERVIEW MEETING (POM)/TECHNICAL INTERCHANGE MEETING (TIM)**

The Contractor may conduct a POM every quarter, or as required by the Government. The POM meetings will be targeted for no more than 3 days in length. Government attendance will generally be limited to approximately 10 personnel or less.

The content of the POM must include:

- (a) Risk and problem identification, ranking, avoidance, reduction, and control.
- (b) Establishment of schedules, to include critical path identification and performance baseline.
- (c) Progress tracking and reporting of milestones.
- (d) Definition and implementation of contingency planning.
- (e) Subcontractor management to include technical effort status and the identification of potential problem areas.
- (f) Any logistic support status.
- (g) Manufacturing status.
- (h) Production problems/status (Resolved/Unresolved).
- (i) Identification of parts obsolescence.

Hard copies of these presentations will be made available at the meetings for all participants.

TIMs will be initiated by the Government. TIMs may be conducted to discuss:

- (a) Specific technical activities,
- (b) Test plans,
- (c) Test results,
- (d) Design issues including technical problems,
- (e) Training issues,
- (f) Logistics issues,
- (g) Implementation concerns.

The length of the meeting is subject dependent. Government attendance will generally be limited to approximately 10 personnel or less.

**CDRL: 009 Agenda and Minutes for Meetings, Reviews and Audits****C.4.3.3 FORMAL REVIEWS AND AUDITS**

The Contractor will plan, host, provide administrative support, and participate in the formal reviews and audits listed below in accordance with contract requirements. Conduct of these activities may be discussed in other sections of the SOW.

- (a) Preliminary Design Review (PDR), C.5.1,
- (b) Critical Design Review (CDR), C.5.2,
- (c) Test Readiness Review (TRR), C.6.3,
- (d) Functional Configuration Audit (FCA), C.7.5.1,
- (e) Physical Configuration Audit (PCA), C.7.5.2,
- (f) Logistics Guidance Conference, C.8.1,
- (g) Configuration Review and Validation of First Article, C.5.3, and
- (h) Provisioning Conference C.8.2.2.

The Contractor will conduct meetings, reviews, and audits in accordance with the Government approved PMP and this SOW. At each management meeting, review, or audit, the Contractor will provide backup data regarding assumptions made and methodologies used in arriving at specific recommendations or conclusions. Management and formal reviews and audits will not be considered complete until Government approval is granted in writing. The Contractor will propose an overall strategy for conducting each set of reviews at the PAC (C.4.3.1).

Support provided by the Contractor will include, but is not limited to, facilities, materials, office equipment, clerical personnel, mockups, technical data, and subcontractor participation (if necessary).

**CDRL: 009 Agenda and Minutes for Meetings, Reviews and Audits****C.5 DESIGN REVIEWS AND FIRST ARTICLE**

The Contractor must ensure that all hardware and documentation required for the operation and support of the REIL are provided. The Contractor will conduct system design meetings as described below. The Contractor will provide a 15 calendar-day notification to the CO before each proposed design review meeting.

**C.5.1 PRELIMINARY DESIGN REVIEW (PDR)**

The Contractor will host a PDR approximately 30 calendar days after contract award. The PDR will evaluate progress, technical adequacy, and risk resolution in development of the allocated design. This review will also demonstrate compatibility of the design approach with the technical requirements, and review impact of design on supportability and cost. Emphasis will focus on the differences between the Contractor's proposed design and the requirements in FAA-E-2159E.

All documentation pertaining to relevant topics should be available for review at PDR, including:

- (a) System and Allocated Requirements Database,
- (b) System Concepts (Hardware Design),
- (c) System Design,
- (d) COTS/NDI/Developmental Items,
- (e) Subsystem Hardware Designs, including maintainer interfaces, and
- (f) Risks Assessments.

The PDR will not be considered complete until the Contractor has accomplished the following:

- (a) Established the allocated baseline according to the approved System/Subsystem Specification (SSS),
- (b) Defined preliminary design for each Configuration Item (CI),
- (c) Provide preliminary internal and external interfaces for each configuration item, and
- (d) Closed all action items.

#### **CDRL: 010 Preliminary Design Review (PDR) Report**

#### **C.5.2 CRITICAL DESIGN REVIEW (CDR)**

The Contractor will host a CDR approximately 90 DAC. The CDR will establish the final REIL configuration.

The Contractor will review in detail the following items, including supporting data and materials, with the Government:

- (a) System and Configuration Items Descriptions,
- (b) System Interface and Schematic Diagrams,
- (c) For Non-Developmental Items (NDI), the Contractor will also provide the following:
  - (1) Detailed functional/physical description,
  - (2) Relevant other results or analyses, and
  - (3) Detailed description of the interfaces.
- (d) Design Analysis Results,
- (e) Human Factors Engineering,
- (f) Reliability and Maintainability Analysis and Predictions,
- (g) System Test Overview,
- (h) Design Concerns (such as environmental control, electromagnetic compatibility/interoperability, technical risks, etc.),
- (i) Identification of Design-Driving/Cost Driving Requirements,
- (j) Development and Test Schedule,
- (k) Documentation Status,
- (l) Production Analysis,
- (m) Physical Description (including preliminary lists of materials, parts and manufacturing flow processes), and
- (n) Logistics Support (test equipment, sparing, training, etc.).

The following are required for CDR milestone approval:

- (a) Establish the development configuration according to the approved SSS,
- (b) Establish the final design that includes the following approved documents:
  - (1) System/Subsystem Specification (SSS),
  - (2) Reliability Analysis Report,
  - (3) Maintainability Analysis Report and,
- (c) Define final internal and external interfaces for each configuration item;
- (d) Establish test requirements, test resources, and test schedule for Development tests;  
and
- (e) Close all action items.

## **CDRL: 011 Critical Design Review (CDR) Report**

### **C.5.3 CONFIGURATION REVIEW AND VALIDATION OF FIRST ARTICLE**

The Government and Contractor will conduct a review of the First Article Hardware and “as built” drawings to verify the test configuration approximately 30 calendar days after CDR approval. The Contractor must submit all completed technical data for the first article. This will include components and parts, and all planned suitable substitute parts, along with any data showing the difference between as-designed and as-built configuration. Any discrepancies between hardware and drawings will be corrected. A Configuration Status Accounting Report will be used in the review and finalized for the First Article (C.5.4).

### **C.5.4 FIRST ARTICLE**

The first article must pass all the required Contractor tests prior to first article approval. The first article will be the production model as defined by FAA-E-2159E and this SOW. It must be fabricated and tested using the production and test facilities that the Contractor intends to use for the Production units. Five first articles will be produced. Three first articles will be shipped to the FAA Technical Center, and the last two will stay at the Contractor’s facility.

## **C.6 TEST AND EVALUATION (T&E)**

### **C.6.1 T&E PROGRAM**

The Contractor will plan, conduct, and document an integrated T&E Program, in accordance with this SOW and the Government-approved Contractor’s Master Test Plan (CMTP). The Contractor will designate a single test manager who will be responsible for all testing. The FAST T&E Process Guidelines located at [http://fast.faa.gov/test\\_evaluation/index.htm](http://fast.faa.gov/test_evaluation/index.htm) will be used as guidance. The T&E Program will verify that the REIL and its support elements meet the physical, functional, interface, and performance requirements, as stated in FAA-E-2159E.

The Contractor will develop test schedules, test plans, test procedures, conduct tests, and generate test reports to meet the requirements of this SOW.

The Government reserves the right to witness Contractor testing during any test phase or level. The Contractor must coordinate testing and ensure that there is minimal redundancy of effort or

data. The Contractor is responsible for integration, control, and coordination of Contractor and subcontractor testing. Additionally, the Contractor will support Government testing if required.

The Contractor must notify the CO and the Quality Reliability Officer (QRO) at least 15 calendar days prior to the start of each formal test. Contractor-developed test tools, documentation, and test-support hardware will be approved by the Government prior to the start of testing.

Additionally, the Contractor will provide the Government copies of all original data collected during the contractor-conducted T&E activities within 7 calendar days following completion of any test program.

### **C.6.2 T&E PLANNING**

The Contractor will develop and maintain the CMTP, which will serve as the overall test control document for the Contractor's REIL test program. The CMTP describes all tests necessary to demonstrate that the technical and performance requirements specified in the contract have been met. The CMTP will address hardware unit and integration level Development Test (DT) efforts required for NDI items, the Design Qualification Test (DQT) contained in FAA-E-2159E, Table IV for the first article system and Production Acceptance Test (PAT).

The CMTP will include the Verification of Requirements Traceability Matrix (VRTM) provided in FAA-E-2159E. The Contractor will update the Government VRTM and create and maintain the CMTP VRTM as necessary to account for any contract modifications to requirements. The Contractor will use the CMTP VRTM to allocate test requirements to appropriate test procedures. The VRTM will maintain references to each selected "shall" statement, and its associated verification method. The CMTP will also identify how the results of analyses will be presented for review and approval by the Government.

### **CDRL: 012 Contractor's Master Test Plan (CMTP)**

### **C.6.3 TEST READINESS REVIEW (TRR)**

The Contractor will conduct a formal TRR in conjunction with the Verification Review at the Contractor's facilities prior to the first DQT. The purpose of the TRR is for the Government to determine if the Contractor is ready to begin DQT.

The Contractor will present the following for review:

- (a) Results of unit and integration level tests;
- (b) Any changes to approved Contractor-developed requirements documents;
- (c) Any changes to approved Contractor-developed test plans and procedures;
- (d) Any changes to test cases or test resources used during informal tests;
- (e) Identification of any test limitations;
- (f) Outstanding trouble reports and waivers, along with an assessment of impact on test readiness; and
- (g) Results obtained from the dry-run of DQT procedures.

(h) Verification analysis reports

## **C.6.4 PLANS AND PROCEDURES FOR CONTRACTOR TESTS**

### **C.6.4.1 DQT PLAN AND PROCEDURES**

The purpose of the DQT is to verify that the REIL satisfies all requirements listed in the CMTP VRTM. The Contractor will prepare and submit a DQT Plan that describes all required DQT efforts required by this SOW. The Contractor will ensure that the DQT Plan objectives indicate traceable paths to the CMTP VRTM and any other applicable VRTMs developed by the Contractor. The Contractor will develop DQT procedures to meet these objectives.

**CDRL: 013 Design Qualification Test Plan**

**CDRL: 014 Design Qualification Test Procedures**

### **C.6.4.2 PRODUCTION ACCEPTANCE TEST (PAT) PLAN AND PROCEDURES**

The Contractor will submit a PAT Plan that describes factory acceptance tests to ensure that each unit is defect free and meets requirements before shipment. The PAT Plan will relate test objectives to requirements of this SOW and the CMTP VRTM.

**CDRL: 015 Production Acceptance Test Plan**

**CDRL: 016 Production Acceptance Test Procedures**

## **C.6.5 CONTRACTOR TESTING**

### **C.6.5.1 GENERAL TEST REQUIREMENTS**

The Contractor will verify each of the FAA E-2159E requirements in at least one test procedure. Prior to commencing T&E, the Contractor will identify the configuration of the REIL to be tested. The configuration will not be changed or modified during T&E without concurrence from the Government. Each test procedure will be considered complete only when the test executes without aborts or errors. The Contractor will ensure test procedures are capable of being repeated with the same degree of accuracy. The Contractor will conduct T&E using Contractor-developed and Government-approved test plans and procedures. Any change to Contractor T&E procedures must be approved by the Government prior to testing. The Contractor will permit Government personnel, and/or their designated representatives, full access to the Contractor's facilities for the purpose of witnessing any tests.

The Contractor will record in a test log any test deviations, test equipment substitutions, and other relevant or unforeseen events along with the start and stop time for each test procedure.

The Contractor will provide the necessary test equipment and ensure its availability, proper calibration, full operational status, and operation. The Contractor must obtain prior written approval from the Government before using unique or modified commercial test equipment not specified in the approved test plans and procedures. In the event of test equipment failure, test

equipment damage, or faulty operation, the Government will require the Contractor to verify calibration of any test equipment provided by the Contractor.

#### **C.6.5.2 DESIGN QUALIFICATION TEST (DQT)**

The Contractor will conduct DQT efforts as outlined in the approved DQT plan. Successful DQT will verify that the implemented design meets the functional and performance requirements of the CMTP VRTM. The Contractor will submit a DQT Report no later than 30 calendar days after completion of DQT. If it is necessary to conduct more than one iteration of DQT as determined by the Government, the Contractor will submit a DQT report documenting the results of the final iteration of DQT.

#### **CDRL: 017 Design Qualification Test (DQT) Report**

#### **C.6.5.3 PRODUCTION ACCEPTANCE TEST**

The Contractor will conduct a PAT at the Contractor's facility on each REIL System and the subsystem or component CLIN items delivered to the Government under this contract using Government-approved test procedures. The PAT will verify prior to delivery that the REIL conforms to applicable specifications and requirements, is free from manufacturing defects, and is representative of the qualified design.

#### **CDRL: 018 Production Acceptance Test (PAT) Report**

#### **C.6.5.4 TYPE TESTING**

The Contractor will conduct type tests for initial production as determined by the QRO using FAA-G-2100G, paragraph 4.2.2.1 as guidance. These tests will be conducted to ensure that system integrity is maintained, and that no degradation of performance or capability has been introduced into the existing REIL production line.

The Government will notify the Contractor not less than 30 calendar days prior to the start of Type Testing. The Contractor will use Government-approved Type Test procedures. The equipment must successfully complete all type tests in order for the production line to continue. In the event of a failure, the Contractor must make repairs, and retest the equipment in accordance with the Government's direction. The Government may direct the Contractor to complete a full Type Test on the affected system. Failure to successfully complete the Type Test may delay the production run until all discrepancies have been resolved.

The Contractor will conduct Type Tests on one system chosen by the QRO out of each of the production lots as defined in FAA-G-2100G, paragraph 4.2.2.2.1. The Type Tests will be in accordance with Section 4.5.3 of FAA-E-2159E. The Contractor will conduct Type Testing at its facility or at an accredited test lab. Prior to conducting the Type Test, the selected equipment must successfully complete a PAT in accordance with this SOW. After the successful completion of the PAT, Type Testing on that unit will begin at the Contractor's factory or at an accredited test lab.

#### **C.6.5.4.1 TYPE TEST PLAN**

The Contractor will develop a Type Test Plan that describes the methodology for testing, evaluating, and acceptance of each production system selected for Type Testing. The plan will relate test objectives to requirements of this SOW, the specification, and the Government approved VRTM.

**CDRL: 019 Type Test Plan**

#### **C.6.5.4.2 TYPE TEST PROCEDURES**

The Contractor will utilize and modify previously developed DQT procedures. The Contractor will use the procedures for each Type Test. The Contractor must ensure that the test procedures indicate traceable paths to the approved VRTM.

**CDRL: 020 Type Test Procedures**

#### **C.6.5.4.3 TYPE TEST REPORT**

The Contractor will submit a Type Test Report documenting the results of the Contractor conducted Type Tests.

**CDRL: 021 Type Test Report**

### **C.6.6 OPERATIONAL TEST AND EVALUATION (OT&E)**

The Government will conduct an OT&E of the REIL at a site designated by the Government. This site will be designated as the Key Site. The Contractor will provide technical support to the Government as requested during all OT&E efforts.

## **C.7 CONFIGURATION MANAGEMENT (CM) PROGRAM**

### **C.7.1 CM PLANNING**

The Contractor will establish, implement, and maintain a CM program using MIL-HDBK-61A and ANSI/EIA-649 for guidance. The CM program will be documented using MIL-HDBK-61A, Appendix A, focusing on Phase II and III, as described in Table A-3. The CM program will cover the Contractor's CM organizational structure and methods of configuration identification, change control, configuration status accounting, and configuration auditing for documentation, physical media, and physical parts representing or comprising the REIL. The Contractor will maintain configuration control of hardware, software, firmware, and developmental/commercial documentation until delivery of the last ordered production unit, subject to configuration change control requirements specified below. The Contractor will identify the single focal point who will serve as the primary point of contact for all communication on CM-related issues.

**CDRL: 022 Configuration Management Plan (CMP)**

## **C.7.2 CONFIGURATION ITEM (CI) IDENTIFICATION**

The Contractor will identify, establish, and maintain the configuration of the REIL and its subordinate configuration items. This will include the following:

- (a) Selecting developmental and commercial configuration items at appropriate levels of the product structure to facilitate the documentation, control, and support of the items and their documentation;
- (b) Determining the types of configuration documentation required for each CI to define its performance, functional and physical attributes, including internal and external interfaces;
- (c) Determining the appropriate configuration control authority for each configuration document consistent with logistic support planning for the associated CI;
- (d) Issuing identifiers for the CIs and the configuration documentation. This includes FAA nameplates in accordance with FAA-G-2100G, Section 3.3.3. The Government will provide written instructions on nameplate content data (e.g. FAA Type Number). Notwithstanding Section 3.3.3.1 of FAA-G-2100G, nameplates may be attached to a commercial item using FAA-approved adhesive to avoid drilling holes in an existing panel or cabinet, thus changing commercial status.
- (e) Maintaining the configuration identification of CIs to facilitate effective logistics support of items in service;
- (f) Releasing configuration documentation; and
- (g) Establishing configuration baselines for the configuration control of CIs.

## **C.7.3 CONFIGURATION CONTROL**

The Contractor will maintain and demonstrate a systematic life cycle configuration change management process for the REIL as described in the CMP (CDRL 022). This change management process, using MIL-HDBK-61A, Section 8, and ANSI/EIA-649, as guidance, will manage the preparation, justification, evaluation, coordination, disposition, and implementation of proposed engineering changes and deviations to the REIL system hardware, software and firmware, and baselined configuration documentation. The Contractor will integrate the FAA REIL into its ongoing change management activities upon successful completion of Functional Configuration Audits (FCA) and Physical Configuration Audits (PCA).

### **C.7.3.1 ENGINEERING CHANGE PROPOSAL**

Changes to established Contractor or Government formal CM baselines require an appropriately classified (Class I (Major) or Class II (Minor)) ECP. The Contractor's CMP and Change Management procedures will describe the processes for the submission, justification, evaluation, coordination, disposition, and implementation of ECPs. Approval is required prior to the incorporation of changes into baselined CIs and associated documentation.

### **CDRL: 023 Engineering Change Proposals (ECP)**

### **C.7.3.2 REQUEST FOR DEVIATION**

The Contractor must submit a request for deviation prior to departing from the approved engineering baseline for a specific number of units or a specified period of time in accordance with the guidance contained in MIL-HDBK-61A, Section 6. Deviations must be for less than the production quantity of the item, and must not require changes to any REIL baseline documentation.

#### **CDRL: 024 Request for Deviation**

### **C.7.4 CONFIGURATION STATUS ACCOUNTING (CSA)**

The Contractor must maintain the configuration baseline for the REIL and the required documentation to support the baseline. The Contractor will record the following information for configuration status accounting:

- (a) Current approved configuration documentation associated with each configuration item;
- (b) Status of proposed engineering changes and deviations from initiation to approval and status of their implementation;
- (c) Results of configuration audits including disposition of actions;
- (d) Traceability of changes;
- (e) Status of the implementation of changes at all locations; and
- (f) Identifiers of electronic documentation and software that have been delivered.

Current CSA information will be included in POM presentations and will be available for review at the Contractor's facility by FAA personnel or designated representatives.

The approved Product Baseline will be established after successful completion of the FCA/PCA. The Contractor will address deficiencies in the design that are identified during the OT&E and during the REIL base lining process. Any changes made subsequent to the OT&E must be traceable to deficiencies identified during the OT&E.

A configuration status accounting report will be provided using MIL-HDBK-61A, Table 7-3 Activity Guide: Configuration Status Accounting Tasks 1, 2, 3, 5, and 6 as guidance only for format and content. Contractor's format is acceptable.

#### **CDRL: 025 Configuration Status Accounting Report**

### **C.7.5 CONFIGURATION VALIDATION AND AUDITS**

The approved Product Baseline will be established after successful completion of the FCA/PCA, conducted using MIL-HDBK-61A, Section 8 as guidance. The Contractor will prepare and submit a Configuration Audit Plan for FCA/PCA. The Contractor is responsible for ensuring that subcontractors, vendors, and supplier's configuration items are part of the audit process. The FCA will be completed prior to the start of the PCA.

**CDRL: 026 Configuration Audit Plan****C.7.5.1 FUNCTIONAL CONFIGURATION AUDIT (FCA)**

The FCA will be conducted using MIL-HDBK-61A, Section 8 as guidance. The purpose of the FCA is to validate that the actual performance of the REIL meets the requirements stated in FAA-E-2159E. The Contractor will develop and maintain a Traceability Matrix identifying the specification requirements and cross-referencing them to the test plans/procedures/results, analysis documents, inspection reports and demonstration records. FCA may be scheduled when the Contractor has accomplished the following (but not later than 30 calendar days after DQT):

- (a) Obtained approval of a preliminary FCA Traceability Matrix CDRL 028;
- (b) Successfully completed contractor conducted testing using Government approved test plans/procedures and reports;
- (c) Completed contractor testing and incorporation of any changes required by a conditional approval; and
- (d) Assembled all Government approved, analysis reports and inspection and demonstration results.

The Contractor will develop a FCA report documenting the findings of the FCA and listing actions taken to correct deficiencies.

**CDRL: 027 Functional Configuration Audit (FCA) Traceability Matrix****CDRL: 028 Functional Configuration Audit (FCA) Report****C.7.5.2 PHYSICAL CONFIGURATION AUDIT (PCA)**

After completion of Government First Article tests, the Government will use one system shipped in place for a PCA. If First Article receives a conditional approval, the Contractor must implement the Government approved changes to the system before proceeding to the PCA.

The PCA will be conducted using MIL-HDBK-61A, Section 8, as guidance. The purpose of the PCA is to ensure that the as-built product configuration documentation matches the as-delivered design. The Contractor will provide a complete set of released drawings, indented parts list, system diagrams, system configuration documentation, access to status accounting documentation, and a system for the audit. The Contractor will develop a PCA Report documenting the findings of the PCA and listing actions taken to correct deficiencies. The PCA will be held not later than 30 calendar days after the FCA.

**CDRL: 029 Physical Configuration Audit (PCA) Report**

The PCA milestone is considered complete when the Contractor has demonstrated that all PCA requirements have been successfully verified and no critical path action items remain.

The Contractor will prepare and submit a Configuration Verification and Audit Summary Report documenting the findings and final resolution of all items from the FCA/PCA.

Production of systems may commence after Government approval of the Configuration Verification and Audit Summary Report.

## **CDRL: 030 Configuration Verification and Audit Summary Report**

### **C.8 LOGISTICS SUPPORT (LS)**

#### **C.8.1 LOGISTICS GUIDANCE CONFERENCE**

The Contractor will plan for, host, and support a Logistics Guidance Conference (LGC), not to exceed 2 days, to be convened 30 calendar days after contract award. The LGC will be held in conjunction with the PAC.

The Contractor will prepare a LGC briefing package and present its approach to accomplishing logistics tasks. The following subjects, at a minimum, must be included:

- (a) Maintenance Planning
- (b) Provisioning
- (c) Supply Support
- (d) Technical Manuals
- (e) Engineering Drawings
- (f) Support and Test Equipment
- (g) Training

#### **C.8.2 PROVISIONING**

##### **C.8.2.1 LOGISTICS MANAGEMENT INFORMATION (LMI)**

The Contractor will deliver to the Government the data products contained in the LMI Data Products CDRL 031, in accordance with MIL-PRF-49506. The data products represent the system design configuration including systems, subsystems, components, assemblies, subassemblies, support and test equipment, and training equipment required by the REIL.

The Contractor will provide LMI data to the LRU level for all REIL COTS, modified COTS, NDI, and developmental items, to components level. Data for temporary items are not required.

The Contractor will adhere to the data definitions, edits, and data formats as described in the LMI format sheets. The Contractor will update and maintain the LMI data and engineering drawings for the duration of the contract period and will provide an updated LMI data product 30 calendar days prior to last system delivery. A second provisioning conference will be held to validate this deliverable.

## **CDRL: 031 Logistics Management Information (LMI) Data Products**

##### **C.8.2.2 PROVISIONING CONFERENCE (PC)**

The PC will be held approximately 30 calendar days after PCA at the Contractor's facility unless otherwise specified by the Government. Approval and acceptance of the LMI will be determined 45 calendar days after the PC with all updates.

At the PC the Contractor will provide the following data and services:

- (a) One complete set of assembly and detail drawings for each item that appears on the LMI Data,
- (b) The Contractor's Technical Instruction Manual (TIM),
- (c) Copies of the Government approved FCA/PCA documentation available for use as a reference,
- (d) A complete assembled REIL system,
- (e) Knowledgeable personnel to disassemble the equipment(s) to the extent required by the Government provisioning team and tools as needed for disassembly,
- (f) Facilities with adequate accommodation must be furnished for the Government provisioning team and Contractor personnel. The Contractor will be advised as to the number of Government representatives prior to the Provisioning Conference; and
- (g) The Contractor's participation in the Provisioning Conference will include representatives knowledgeable and familiar with the Provisioning Conference documentation and will also include an engineering representative.

### **C.8.3 SUPPLY SUPPORT**

#### **C.8.3.1 SPARES**

##### **C.8.3.1.1 SPARE PARTS COMMON**

After the Provisioning Conference, the Government will order the required spare parts common under section J – 8 (which is to be completed and priced after the provisioning conference). The Contractor will package and ship the spare parts common in accordance with Sections D, and F.

##### **C.8.3.1.2 SPARE PARTS PECULIAR**

The Contractor will ship all spare parts peculiar identified under section J-5 (which is to be completed and priced after the provisioning conference), and CLIN 0042 Freight On Board (FOB). The destination is the following location:

Mike Monroney Aeronautical Center  
FAA Logistics Center  
6500 South MacArthur Blvd  
Oklahoma City, OK 73125  
Mark for: Operating Stock

##### **C.8.3.1.3 SITE SPARES KIT**

The site spare parts kit consists of one of each type of replaceable module and printed circuit card contained in the REIL equipment. If the equipment contains more than one of the single

replaceable module or card, only one spare module or card will be provided. There will be one kit of site spares for each delivered REIL system. Site spares kit will be delivered in accordance with Sections D, and F. Each replaceable module and printed circuit card will be complete and contain all components to operate and must pass all tests in accordance with FAA-E-2159E.

#### **CDRL: 032 Site Spares List**

#### **C.8.3.1.4 PARTS OBSOLESCENCE**

The Contractor will notify the CO and the COTR when any of the following conditions exist:

- (a) An item is no longer manufactured and cannot be procured or the vendor is no longer in business.
- (b) An item is no longer repairable because the piece parts are no longer available from vendors.

#### **C.8.4 TOOLS AND TEST EQUIPMENT (T&TE)**

The Contractor will prepare and deliver to the Government, a list of all the Tools and Test Equipment (T&TE), both common and special which are not an integral part of the REIL but are required to inspect, test, calibrate, service, and repair the REIL. This list must include only the tools and test equipment required to perform site and depot maintenance. Contractor's format is acceptable. The list will include a section for all common tools, and a section for special tools and test equipment, a detailed description of each tool/test equipment part number, manufacture's CAGE code, and quantity required. The Government discourages the use of special tools and test equipment. The Contractor will ensure that the T&TE information is contained in the Technical Instruction Manual. The Government will decide whether to purchase all or part of the T&TE.

#### **CDRL: 033 Tools and Test Equipment List (Common and Special)**

#### **C.8.5 TECHNICAL DATA**

##### **C.8.5.1 TECHNICAL DATA PACKAGE (TDP)**

The Contractor will provide a TDP in accordance with MIL-DTL-31000B, as tailored by CDRL 038. When delivered, the TDP must include all data necessary to enable the Government to repair or procure all shop replaceable units and line replaceable units required under the contract.

The TDP must include all of the data for a contract item, component, or process, needed to have the item or component identically manufactured, without the use of additional data, which is not readily or economically obtainable. The Government has the right to modify, reproduce, release, perform, display, or disclose the TDP for the specific purposes of permitting Government employees or Government support contractors to install, operate, conduct training, or maintain the REIL equipment.

#### **CDRL: 034 Technical Data Package**

### **C.8.5.2 TECHNICAL INSTRUCTION BOOK (TIB)**

The Contractor will develop a TIB in accordance with FAA-D-2494B. The TIB must completely describe the system and provide details necessary to support operation, maintenance and repair of the REIL equipment. There will be reviews of the draft TIB at the 50 and 100 percent completion of the document.

#### **CDRL: 035 Technical Instruction Book**

#### **C.8.5.2.1 MANUSCRIPT PLAN FOR TIB**

The Contractor will develop a manuscript plan for the TIB in accordance with FAA-D-2494B. The manuscript plan must include a prospectus and a schedule for TIB preparation, review, and validation.

#### **CDRL: 036 Manuscript Plan for Technical Instruction Book**

#### **C.8.5.2.2 VALIDATION PLAN FOR TIB**

The Contractor will develop a validation plan in accordance with FAA-D-2494B. The Contractor will validate the contents of the TIB including all preventive and corrective maintenance procedures in accordance with the approved plan. The Government will verify that the Contractor has performed validation; the Contractor will allow the Government to observe TIB validation as requested.

#### **CDRL: 037 Validation Plan for Technical Instruction Book**

### **C.8.6 TRAINING**

#### **C.8.6.1 OT&E TRAINING**

Prior to delivery of First Article systems for Government-conducted testing, the Contractor will provide a one-time class for FAA personnel who will participate in the OT&E. Contractor's format is acceptable. The class instruction must familiarize the students with the installation and operation of the REIL system to allow the students to conduct the OT&E.

#### **C.8.6.2 MAINTENANCE TRAINING FOR AIRWAYS FACILITIES (AF)**

As outlined below, the Contractor will prepare training documentation in accordance with FAA-STD-028C, Contractor Training Programs, AF Standards and Guidelines for Course Development, and this SOW.

#### **C.8.6.2.1 TASK AND SKILLS ANALYSIS REPORT (TASA)**

Following contract award, the Contractor will prepare and submit, for Government approval, a TASA in accordance with FAA-STD-028C, DID-2. The report must identify, in the

introduction, what impact the REIL equipment and technology will have on the current work force and identify the skills required to monitor, control, or maintain the REIL in accordance with FAA-STD-028C, DID-2, 8, Content Requirements.

#### **CDRL: 038 Task and Skills Analysis Report**

#### **C.8.6.2.2 COMMERCIAL-OFF-THE-SHELF (COTS) TRAINING MATERIALS REPORT**

If the Contractor proposes COTS training materials as part, or all, of the training, then the Contractor must submit a COTS Training Materials Report (FAA-STD-028C, DID-4) for Government approval. The report must include an assessment of the suitability of the proposed COTS materials against the training requirements identified in the TASA. All of the proposed COTS training materials must be submitted with this report.

If COTS training material does not match the TASA, is not available, is not acceptable, or does not fully meet the requirements identified in the Training Course Requirements of this SOW, the Contractor will prepare and submit some or all of the deliverables listed in C.11.1.4, Development of Training Materials. The Government will designate the required deliverables.

#### **CDRL: 039 Commercial Off-the-Shelf Training Materials Report**

#### **C.9 ENGINEERING SERVICES**

As required by the Government, the Contractor will perform support tasks including, but not limited to:

- (a) Witnessing and assisting in operational and field shakedown tests;
- (b) Troubleshooting and correction of problems that may arise after successful completion of tests;
- (c) Equipment installation including performance of site surveys, site design, and project coordination;
- (d) Field Level Maintenance;
- (e) Configuration Management;
- (f) Others.

#### **C.10 GUARANTEE**

The Contractor must provide its commercial guarantee at no additional cost to the Government.

#### **C.11 BASE CONTRACT OPTIONAL REQUIREMENTS**

##### **C.11.1 TRAINING**

##### **C.11.1.1 DEPOT LEVEL TRAINING**

The Contractor will provide one depot level maintenance/analysis training class for engineers, technicians, and FAA instructors on the system. The training will be conducted on all parts of the system (but not limited to repairable items), including modules, components, operation and maintenance of specialized test equipment, diagnostic test beds, and software operations. This course will not repeat the site technician training. Certification of operations and examination will not be required for depot level maintenance training.

Depot level training is defined, as the training required by the engineer to provide the capability to accomplish detailed analysis of the system. It will also provide the depot technician the understanding to use the repair procedures, test equipment, diagnostics, and etc, to isolate faults, repair, test, and checkout items to the component level. The Contractor-conducted training will include: theory of operation taught at the component level; system software training to aid the technician in troubleshooting; and laboratory training using repair procedures, bench test procedures, and LRU verification in the system test bed.

#### **C.11.1.1.1 MATERIALS TO BE DELIVERED**

The Contractor will provide the following materials to conduct the class:

- (a) Master copies of the documentation for use in follow-on training, including: lesson plans, course guides, training manuals, supplemental handouts, training aids, and other items the Contractor deems necessary to accomplish the training.
- (b) A preliminary submittal containing outlines of the material, required for review by the Government, before the Contractor develops the course. Supplemental items such as training aids and other items, identified in this preliminary submittal.
- (c) The lesson plan outlines the schedule, subject material, training aids, other materials and lesson outcomes for each session. The course guide, to be given to each student, provides the student with a guide for the overall course.
- (d) The training manuals, to be given to each student must contain the following: block diagrams, detailed theory of operation of the system, component level theory of operation, system operation procedures, component level part list, schematics, circuit card assembly schematics, illustration parts break down, system interconnect diagram, and explanation of basic computer operation in the system.

Supplemental handouts will be supplied in areas where additional detail or explanation is necessary for understanding of a subject. Training aids, such as, cells, cutaways, models, charts; etc., will be supplied if they are required to understand a subject. Other items such as computer simulations, videos, simulators, reference materials; etc., approved by the Government in the preliminary submittal, will also be supplied.

#### **C.11.1.2 FAA/CONTRACTOR CONFERENCES**

The Contractor will conduct a Training Guidance Conference as requested by the Government. The purpose of the conference is to provide details on and clarification to the training requirements set forth in this SOW and to accomplish the following:

- (a) Establish a liaison and working relationship between the Contractor personnel and FAA training representatives;

- (b) Permit inspection of the Contractor's training facility;
- (c) Discuss the proposed course development methods and the requirements associated with each deliverable required from the Contractor;
- (d) Discuss the Contractor's plan for accomplishing the training; and
- (e) Discuss classroom administration requirements.

The Contractor will conduct training In-Progress Reviews (IPRs). The purpose of these meetings will be to provide information concerning the progress of the training development effort. The Government will schedule the IPRs as needed.

### **C.11.1.3 MAINTENANCE TRAINING DEVELOPMENT – GENERAL REQUIREMENTS**

The Contractor will develop and conduct an AF training course in accordance with FAA-STD-028C and the Airway Facilities Standards and Guidelines for Course Development. FAA-STD-028C can be downloaded from

[http://www.faa.gov/ahr/////policy/hrpm/ld/ld\\_ref/028C.cfm](http://www.faa.gov/ahr/////policy/hrpm/ld/ld_ref/028C.cfm)

A course will be developed for Airway Transportation Systems Specialists (ATSS), who will be responsible for providing on-site maintenance for the REIL. Training content must address, but not be limited to, the following:

- (a) System Overview,
- (b) Maintenance concepts and responsibilities,
- (c) System block and Line LRU diagrams,
- (d) In-depth parameters,
- (e) System and subsystem interfaces,
- (f) Operational, functional, and adjustment checks in accordance with the manufacturer's instructions,
- (g) Fault isolation and diagnostics procedures for failures to the LRU level and restore the equipment to operational service through removal and replacement of the faulty LRU,
- (h) Following removal and replacement of the fault LRU, returning the system to service and verifying operation,
- (i) Demonstrate the ability to perform configuration, restoration, verification and certification of service,
- (j) Security, and
- (k) Safety.

#### **C.11.1.3.1 TRAINING COURSE REQUIREMENTS**

The delivery method for the REIL maintenance training will be determined by the FAA. If lecture/laboratory is selected, it will be conducted at the Contractor's facility on an 8-hour academic day, 5 days per week schedule. The schedule will be adjusted to ensure that students are not required to travel outside of normal working hours. Classes will not be held on federal holidays and will not be absorbed in the overall course length. Class instruction periods for

lecture will normally be 50 minutes in duration with a 10-minute break between periods of instruction. The length of practical application (laboratory exercises) may vary as the situation dictates. Typically for each hour of class instruction there is one hour of lab. Maximum class size will be eight students per class. The training will be of sufficient depth to enable FAA technicians to operate and maintain equipment in accordance with the FAA NAS on-site maintenance concept. The student-to-instructor ratio will be no greater than eight to one for classroom training and no greater than two to one for the laboratory portion. The number of REIL systems available for labs will determine the final class size with no more than two students per system for the lab portion. At a minimum, the training should address these requirements:

- (a) Training will be based on a TASA with cognitive and performance objectives directly derived from the TASA.
- (b) Training materials will be based on the system/equipment technical instruction book(s).
- (c) Each student will be provided a complete set of course materials for the training provided.
- (d) Course conduct will make maximum use of all materials distributed. Student manuals and guides will encompass a "how to" approach and work in concert with the instructor materials (lesson plans, PowerPoint presentations, figures, handouts, etc.).
- (e) The Contractor will furnish and maintain all reference, instruction, and student materials for each class.
- (f) The Contractor will make one set of Technical Instruction Books (TIBs) available to each student during the training classes. At the conclusion of each class, students will retain all student course materials issued to them.
- (g) Submit formats for training materials for Government approval prior to use.
- (h) On completion of the training, each student will be able to perform all preventive maintenance, as well as identify, isolate, and correct faults to the LRU level (corrective maintenance). In addition, the training will enable FAA technicians to understand the functional capabilities and operational concepts of the equipment.
- (i) Course objectives will be thoroughly tested in written and graded lab practical examinations. Exams will be such that a student achieving a 70 percent score will possess the requisite of the equipment/system. Up to three versions of each exam, of equal difficulty, will be used for testing purposes.
- (j) Ensure development of training materials is completed at least 30 calendar days prior to start of the first class.

To meet urgent installation and/or fielding requirements, the Government may direct the Contractor to conduct a second shift or an accelerated training schedule. If so directed, the Contractor will conduct training to accomplish all instructional activities while maximizing use of the system or equipment.

The Contractor will conduct up to twelve classes. The Government reserves the right to purchase additional classes, if needed.

**C.11.1.3.2 ENVIRONMENTAL OCCUPATIONAL SAFETY AND HEALTH (EOSH)**

All training developed or revised by a Contractor must meet or exceed the appropriate Occupational Safety and Health Administration (OSHA) regulations (see OSHA 29 CFR 1910). OSHA safety regulations will be integrated into course content, as appropriate.

All instruction must emphasize each person's accident prevention responsibilities, both as an individual and as a representative of the Government. Safety precautions related to training on the operations, maintenance, and/or troubleshooting of equipment will be a prominent part of the training.

**C.11.1.3.3 CONTRACTOR-FURNISHED TRAINING EQUIPMENT**

The Contractor will furnish all equipment; e.g., batteries, test equipment, support equipment, special tools, etc., necessary to conduct training. The Contractor will maintain all equipment in an operable and usable condition except for planned disassembly and fault isolation training exercises. The Contractor will notify as soon as possible the FAA Training POC by telephone if the equipment is inoperable and/or unusable for course conduct.

**C.11.1.3.4 CONTRACTOR-FURNISHED TRAINING SITE(S) AND FACILITIES**

Unless otherwise stated, training will be conducted at the Contractor's facility, or such other facility approved by the Government, in the United States. Any training sites and/or facilities furnished by the Contractor are subject to inspection and approval by the FAA CO, or designee, during the contract period. The following site/facility conditions will be appraised: space, lighting, noise, heating and cooling, safety of environment, furniture, cleanliness, and sanitation. The Contractor must correct any known deficiencies identified before the start of training.

**C.11.1.4 DEVELOPMENT OF TRAINING MATERIALS**

The FAA will determine if the Contractors existing training materials meet all of the FAA's training requirements. If the training materials do not meet the requirements, the FAA will designate from the following list additional deliverables which will be required:

- (a) Training Development Plan, FAA-STD-028C, DID-5
- (b) Course Design Guide, FAA-STD-028C, DID-6
- (c) Tests, FAA-STD-028C, DID-7
- (d) Classroom Training Materials, FAA-STD-028C, DID-8

**CDRL: 040 Training Development Plan**

**CDRL: 041 Course Design Guide**

**CDRL: 042 Tests**

**CDRL: 043 Classroom Training Materials**

**C.11.1.5 VALIDATION OF TRAINING COURSES**

The Contractor will conduct a Contractor's Presentation and Operational Tryout, after the FAA has determined the COTS training materials fully meet the FAA's requirements and are acceptable. If the COTS training materials are not acceptable, the Contractor may only conduct the Contractor's Presentation and Operational Tryout after the acceptance of the Training Development Plan, the Course Design Guide, the Tests, and the Classroom Training Materials.

#### **C.11.1.5.1 CONTRACTOR'S PRESENTATION**

The Contractor's Presentation, FAA-STD-028C, DID-14, is a formal step in the validation of the training materials. During the presentation, the Contractor will present a shortened version of each fully developed draft lesson, including draft test items. Each lesson will be given in enough detail and depth so that the integration and effectiveness of the instructional materials, learning sequence, performance exercises, tests, and the time allocations can be fully assessed by the Government.

The Contractor's Presentation will be conducted at the Contractor's facility using materials that will be used in the actual training course. Contractor personnel responsible for the design, development, and technical accuracy of the training materials must be available during the presentation to answer questions about the course. Additionally, Contractor personnel, to include instructor(s), developer(s) and appropriate subject matter experts, must be available if required.

The Contractor must correct errors, omissions, and deficiencies in student and instructor materials discovered during the Contractor's Presentation. Materials must be corrected prior to the conduct of any classes. The Contractor must submit corrected copies of the course materials for the Government's review and approval.

The Contractor's Presentation, FAA STD 028C, DID-14, should be conducted at least 30 calendar days prior to conduct of the Operational Tryout. The materials must have all changes, modifications, and revisions noted by the Government in the Contractor's Presentation prior to the Operational Tryout.

#### **CDRL: 044 Contractor's Presentation**

#### **C.11.1.5.2 OPERATIONAL TRYOUT**

The Operational Tryout, FAA-STD-028C, DID-15, is a continuation of the validation of training materials. Complete draft lessons are presented to representatives of the target population to determine if the instructional approach is appropriate and effective, test items and time allocations are appropriate, and that the format of the materials is easy to use. Information obtained from the Operational Tryout is used to revise and improve the instructional effectiveness of the materials.

The Operational Tryout will be conducted at the Contractor's facility and will last one and a half times the length of the proposed course. Government representatives selected as monitors will not count against the class enrollment. The Contractor must correct errors, omissions, and

deficiencies discovered during the Operational Tryout and resubmit materials as directed by the contract. Subsequent classes will not commence until a successful Operational Tryout has been conducted and approved by the Government.

The Contractor will submit an Operational Tryout Report upon completion of the Operational Tryout. The Operational Tryout will not count against the number of classes to be conducted by the Contractor.

The Contractor must incorporate all changes, modifications, and revisions noted by the Government as a result of the Operational Tryout.

### **CDRL: 045 Operational Tryout Report**

#### **C.11.1.5.3 COURSE EVALUATIONS**

All students will be given the opportunity to complete written evaluations during, or at the end of, the conduct of training. The Government will provide the evaluation forms to the Contractor for distribution to the students. These forms may include, but not be limited to, student lesson critiques, time logs, errata sheets, end-of-course critiques, etc.

During the Operational Tryout and First Course Conduct, the Government will review the forms and identify necessary changes to training materials. The Contractor must incorporate the revisions. At subsequent classes, the Contractor will administer the designated evaluation forms and forward them to the Government designee.

#### **C.11.1.6 CERTIFICATE OF TRAINING**

The Contractor will deliver a certificate of training for each student who successfully completes the training. At a minimum, the certificate must contain:

- (a) Course title and FAA course number
- (b) Hours of training completed
- (c) Location of training
- (d) Class start and end dates
- (e) Course grade (numerical or pass/fail)

#### **C.11.1.7 ON-THE-JOB (OJT) TRAINING MATERIALS**

The Contractor will prepare and deliver an OJT course. In accordance with FAA-STD-028C, the Contractor will deliver a Training Manual and Student Guide. The format and content of the OJT course must comply with the template and example material provided by the FAA and FAA-STD-028C DID-18. Prior to delivering the final OJT Course, the Contractor must ensure all FAA-approved revisions/corrections identified during the final draft validation are incorporated. The Contractor will update the TASA to ensure all tasks in the OJT course are included.

As a minimum, the OJT course content will include all tasks contained in the performance exam. The OJT course will include supporting tasks for the tasks defined in the performance exam. The format and content of the OJT course will comply with the template and example material provided by the FAA Academy and FAA-STD-028C DID-18.

The Technical Instruction Manual will be in final draft form prior to submittal for validation of the OJT course final draft. A released FAA Order or Notice addressing the system will be available prior to submittal for validation of the OJT course final draft. If required, the Performance Exam (C.11.1.8) will be in final draft form prior to submittal for validation of the OJT course final draft.

#### **CDRL: 046 On-the-Job Training Course**

##### **C.11.1.8 PERFORMANCE EXAM (PE)**

The Contractor will prepare and deliver a PE. The format and content of the PE must comply with the template and example material provided by the FAA Academy and FAA-STD-028C DID-19. Prior to delivering the Final PE, the Contractor must ensure all FAA-approved revisions/corrections identified during the final draft validation are incorporated. The Contractor will update the TASA to ensure that all tasks in the PE are included.

In addition to the references defined in FAA-STD-028C DID-19, the critical material content will be derived from the FAA Order 6850.5C, Maintenance of Lighted Navigational Aids, and the TI manual.

The TI manual will be in final draft form prior to submittal for validation of the PE final draft.

#### **CDRL: 047 Performance Exam**

##### **C.11.2 INTERIM CONTRACTOR DEPOT LOGISTICS SUPPORT (ICDLS)**

Depot level maintenance will consist of repairing and/or replacing failed LRUs that are shipped from the site or work center. Under this contract, depot level maintenance may be accomplished through the use of ICDLS.

Pursuant to delivery orders, the Contractor will provide ICDLS for each REIL system commencing on the date of delivery at the prices listed in Section B. Under ICDLS, the Contractor will repair or replace, at its option, all LRUs that fail or become defective, including those not covered by the Contractor's warranty. Repaired LRUs will be restored to a serviceable operating condition meeting all operational and functional requirements for which they were designed. Repaired items must function in a manner that will allow the complete system to meet all initial factory production operating tolerances. All repairs must be in accordance with the Contractor's established shop methods and procedures. Minor cosmetic defects (e.g., scratches, small dents) that do not affect the installation or operation of the item do not require repair.

The FAA Logistics Center (FAALC) Item Manager (IM) will be the single Point of Contact (POC) for all maintenance actions between the operational site and the Contractor. The IM will

coordinate all matters pertaining to shipping and tracking of failed units of equipment. The Contractor will not make any changes or agreements with the IM that may affect the requirements of this SOW without prior authorization from the CO.

All requisitions will be directed to the Contractor's POC by means of web-based copy of the requisition. In the event that the web-based application is temporarily unavailable and an urgent need for shipment of an asset exists, the requisition may be identified to the Contractor by the FAALC IM via telephone contact (1-888-322-9824). The document will include a tracking number. Shipment is not authorized until the Contractor has received a fax or an electronic transmittal of the requisition from the FAALC IM.

As ordered by the Government, the Contractor will furnish all facilities, qualified labor, supervision, materials, documentation, piece parts, equipment, tools, and services required to perform depot-level repair and supply support of the REIL systems hardware, firmware, software, and ancillary equipment at the Contractor's facility. This repair service includes issuing, stocking, receipting, repairing, inventory management or replacing Exchange and Repair (E&R), expendable, and consumable lowest replaceable units or other REIL system hardware, firmware or software; packaging, handling, and round-trip transportation costs to and from the Contractor's facilities and the Government REIL site installations nationwide. The Contractor will maintain a sufficient level of serviceable LRUs to repair and restore service to the REIL.

#### **C.11.2.1 WEB-BASED REQUISITION INTERFACE PROCEDURES**

The Contractor will utilize the FAALC Web-Based Logistics Information System (LIS) Interface Tool to receive and process requisitions forwarded by the FAA IM as described in Section J-X (LIS Operating Procedures). The Contractor will complete all appropriate Interface data fields; provide the required asset and asset return information, as well as any associated shipping information on a daily basis.

The Contractor will monitor the web-based tool for requisitions during standard working hours, defined as 0800 – 1630 CST (8:00 a.m. – 4:30 p.m. CST), Monday – Friday, Federal holidays excluded. The Contractor will provide the designated POC, by name and telephone number, who can be contacted at any time in the event that immediate shipment of an asset to a site is required at any time outside of the listed standard working hours.

The Contractor will receive returned assemblies from REIL sites and will record information regarding the returned item in the web-based requisition interface tool, to include originating site, LRU, and shipping information.

#### **C.11.2.2 REPAIR DECISIONS**

Items will be considered non-repairable only when the cost of repair exceeds 65 percent of the purchase price of a new item. ICDLS includes inspection and checkout of returned items that are thereafter determined to be in proper working order and not in need of repair. This is dependant upon the site or IM first consulting with the Contractor's POC concerning indications of failure.

In addition, the Contractor must contact the site or IM before returning an item without repairs having been made.

### C.11.2.3 REPAIR PRIORITIES

The following priorities will apply for delivery of all serviceable items to the field. Priorities are identified by the field and endorsed by the IM. The Contractor must provide a 24-hour/seven (7) days per week POC with name and phone number.

(a) Priority 1

This priority is required when an extreme emergency condition exists, and will be used when either the prime or standby equipment is inoperative or when a facility is operating at reduced performance, which adversely affects traffic control operations. Shipment to the designated facility is to be made within 24 hours after receipt of notification by the FAALC IM, including nights and weekends. The IM will instruct the Contractor if other means of shipment, such as counter-to-counter delivery are required;

(b) Priority 2

This priority is required when an emergency condition is determined to exist. This condition exists when a facility is operating with substandard equipment or when other operating conditions indicate imminent facility failure or outage. Door-to-Door, Next-Day Air Express Shipments to the designated facility will be made within 48 hours after receipt of notification by the FAALC IM;

(c) Priority 5

This priority is used for a routine requirement or stock replenishment. Shipment to the designated facility is to be made within 7 calendar days after receipt of notification by the FAALC IM.

#### LRU Repair Procedures:

1. All repaired items must comply with FAAD-STD-1293C Servicing Standards and Test Requirements for Ground Electronic Equipment and all other applicable provisions of the contract.
2. The Contractor will implement authorized hardware modifications, as directed by the Government.
3. The Contractor will repair and system test a repairable LRU to the extent necessary to restore it to a condition in which the item is capable of meeting all operational and functional requirements for which it was designed or as approved by the FAA. If the item is part of a system, then it must function in a manner that will allow the complete system to meet all initial factory production operating tolerances. Minor cosmetic defects that do not affect the installation or operation of the item do not require correction or repair.
4. The Contractor will clean, visually inspect, bench test, and isolate faults on all repairable units. The Contractor will disassemble items and components as necessary to identify and accomplish repairs or to establish that the item is serviceable.

5. The Contractor will reassemble, calibrate, functionally test, perform acceptance inspections, and prepare the item or component for shipment. All methods and procedures will be accomplished with the standard tools and test equipment developed for that purpose. Any Government-approved modifications to LRUs that have not previously been incorporated will be accomplished by the Contractor at the time of repair.
6. The Contractor will re-test vendor repaired parts when previously repaired parts have shown a high failure rate in the field.
7. The Contractor will not replace LRUs with non-identical items. Non-identical replacements of LRUs must be approved by the Government, utilizing existing National Change Proposal/Engineering Change Proposal (NCP/ECP) procedures and in accordance with guidelines contained in FAA Order 1800.66. Replacement piece parts must be identical in form, fit, and function, with respect to system operation, to the original parts identified in the approved system hardware baseline. Form, fit, and function replacements must be identified to and approved by the Government.

The replacement parts must not:

- (a) Degrade performance of any part of the overall system;
- (b) Introduce incompatibilities with the normal operation of system elements; and /or,
- (c) Impact the functions performed by, or degrade the performance of the supplied software.

#### **C.11.2.4 TEST, INSPECTION, AND ACCEPTANCE**

Testing, inspection, and final acceptance of repair items must be in accordance with the production test, inspection, and acceptance requirements of the SOW. Acceptance test procedures, and test data forms require the prior approval of the Government.

#### **C.11.2.5 EXPENDABLE LRUs**

The Contractor will furnish expendable LRUs to support the repair and restoration of REIL service. Replacement expendables must be identical in form, fit, and function to the original item and must be identified to and approved by the Government.

In the event the Government deems it necessary to change the category of an LRU from “expendable” to “repairable”, the activities required to effect this change will be coordinated with the Contractor. The new category will be identified in the LIS system and the REIL operational facilities will be notified of the change.

#### **C.11.2.6 REPORTING REQUIREMENTS**

The Contractor will maintain an automated database of depot supply activities. The database will be the basis for the monthly maintenance reports. The ICDLS Report is used to collect ICDLS maintenance and cost data from the logistics support Contractor. The maintenance data

is used for updating and tracking maintenance actions, parts usage, selected failure analysis and resolution, and inventory levels.

## **CDRL: 048 ICDLS Activity and Repair Status Report**

### **C.11.2.7 INTERIM CONTRACTOR SUPPORT TRANSITION PLAN**

The Contractor will prepare for the Government's review and approval an ICDLS Transition Plan (ICDLSTP). The ICDLSTP will be submitted in Contractor's format nine months prior to the end of the ICDLS. The ICDLSTP establishes the procedure and means for the orderly transfer of system support and maintenance management activities from the Contractor to the Government.

ICDLSTP will detail the activities that the Contractor must undertake to ensure a smooth transition of the ICDLS operation from Contractor to the FAALC. These activities include preparations, facilities, and personnel that the FAALC will require to assume responsibility for the conduct of all services provided under ICDLS. The ICDLSTP will recommend the time required to ensure a smooth transition with minimal interruption to repair activities. The ICDLSTP will include but not be limited to:

- (a) Any formal/OJT training/familiarization required supporting the repair functions;
- (b) Activities, procedures and schedule for any necessary refurbishment, calibration and acceptance of GFE/GFP prior to return to the Government;
- (c) Detailed plans for shipment, plan for shipment installation and check out of any GFE/GEP Test Equipment at the FAALC;
- (d) The duration and type of Contractor support required at the FAA during the repair start up;
- (e) The disposition and physical inventory of lay-in stock, to include all accounting records;
- (f) Operating methods to be employed to assure repair service during the transition period;
- (g) Method or procedure of transition management of the Vendor/OEM repair contract to the Government;
- (h) An estimated cost (based on the Contractor's experience of managing vendor repair subcontractor for the life of the systems);
- (i) Any recommendation for additional equipment, process and documentation that would be beneficial to the FAALC operation of the transitioned CDLS;
- (j) Software development system and related documentation;
- (k) Impletion of any technology upgrades;
- (l) An itemized list of government-owned hardware/software used during development that will be transferred to the Government; and
- (m) Schedule for spares, equipments, TDP, etc., to be transferred to the FAALC.

## **CDRL: 049 Interim Contractor Depot Logistics Support Transition Plan**